

PATENT SPECIFICATION

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(54) DEODORANT COMPOSITION

(71) We, L'OREAL, a French body Corporate of 14 Rue Royale, Paris, France, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

The present invention relates to a deodorant composition.

- 10 Deodorant compositions used for body hygiene, the deodorant effect of which is immediate from the moment that they are applied, are already well known, but it is clear that such compositions cannot give 15 complete satisfaction. In the case where the composition is used preventatively, the deodorant effect is exerted from the moment that the composition is applied, with, furthermore, a progressively reduced efficiency, and 20 also the application of such a composition at the desired moment also presents obvious disadvantages. To this must be added the need to use an excess of the active product at the time when the composition is applied 25 or to make numerous applications, with all the nuisance which this entails.

The aim of the present invention is to remedy the abovementioned disadvantages and, especially, to avoid the deodorant effect 30 appearing from the moment that the cosmetic deodorant composition is applied.

We have now discovered, according to the present invention, that it is possible to achieve the delayed activity of the composition by physically separating the deodorant compound from the vehicle in which it is distributed up to the moment when perspiration appears, this being done through the well known technique of micro-encapsulation, suitably by coacervation 40 which involves surrounding the deodorant, divided into small particles, by an appropriate envelope. The preparation of the micro-capsules does not form part of the 45 invention.

[P]

Accordingly, the present invention provides a cosmetic composition suitable for application to the skin which comprises an appropriate vehicle, and a deodorant and/or anti-perspirant agent which is micro-encapsulated, the micro-capsules being such that they become ruptured when exposed to perspiration.

In accordance with the present invention, the "support" phase of the deodorant composition may be one of the usual vehicles for such compositions, including cellulose wadding or any absorbent fabric onto which the deodorant or antiperspirant is deposited. The deodorant and/or antiperspirant compound or composition which is micro-encapsulated and contained in the above mentioned vehicle causes perspiration, and other odours, to disappear after a certain period of time following the appearance of the latter.

We have discovered that it is possible to ensure the triggering of the activity of the deodorant and/or antiperspirant product by making the envelopes of the micro-capsules either soluble in the water or aqueous alkaline solution which arises, or permeable to the water which arises from perspiration, or are soluble in mixtures of water and other solvents or are destroyed by micro-organisms such as proteus vulgaris which develop following perspiration, with the destruction of the envelopes taking place in proportion to the intensity of the perspiration. Preferably the envelopes have sufficient solubility in or permeability to water and/or are destroyed by the micro-organisms which accompany perspiration.

A variant of the liberation mechanism involves bringing about or accelerating the destruction of the envelope with a mixture of water and another appropriate agent. In this case, the capsules contain, in addition to the deodorant composition, for example, an alcohol of 1 to 6 carbon atoms,

such as ethanol, or a polysaccharide, the envelope being sufficiently permeable to the water arising from the perspiration. When, for example, a completely hydrolysed co-
5 polymer of styrene and maleic acid is used as the encapsulator, the water arising from the perspiration penetrates through the walls of the capsule in which it forms, for example, a water-ethanol mixture which, as a 50:50
10 mixture readily dissolves the walls. Thus after a certain interval of time, depending on the extent of perspiration, an increasing number of capsules liberate the deodorant product and do so in an increasing rate as
15 the optimum proportions for the solvent mixture are more and more rapidly achieved.

The envelopes of the micro-capsules containing deodorant compositions may be
20 derived from a most diverse group of compounds, provided that they are sufficiently dissolved by, or permeable to, the water arising from the perspiration, at the appropriate pH, or that they are destroyed by
25 micro-organisms which develop during perspiration. Suitable examples include gelatine, ethyl-cellulose, cellulose acetophthalates, and treated or untreated polyvinyl alcohols.

30 Generally, the size of micro-capsules is from 30 to 500 microns, preferably from 100 to 250 microns, and the weight of the envelopes relative to the total weight of the capsules varies from 1 to 10%, preferably
35 from 3 to 6% by weight. The capsules contain deodorants such as compositions known under the designation "G 4" and "G 11" (hexachlorophene and dihydroxy-dichlorodiphenylmethane, respectively), long-chain
40 quaternary ammonium compounds, alums, for example aluminium alum, derivatives of anilides such as salicylanilides and chlorophenylhexanes, also halogenophenols such as 2,4-dichloro-3,5-xyleneol; 3,4,6-tri-
45 chlorophenol, 4-chloro-3,5-xyleneol and bis-parachlorophenol digunidinothexane, or customary cosmetic deodorant compositions. It is also possible to use, in addition to or in place of these deodorant compositions
50 or compounds, micro-organisms which are capable of destroying the micro-organisms which develop during perspiration and which are to a large extent responsible for the odours which one wishes to suppress.
55 The micro-capsules may also contain perfume.

Of course the proportions of the above-mentioned agents can be calculated in relation to the nature and thickness of the
60 envelope so that the deodorant products are liberated in relation to the intensity of perspiration and so that the destruction of the envelopes necessarily takes place within a sufficient period of time.

65 In any event, during the preparation of

the cosmetic deodorant compositions of the present invention particular attention should be given either to adjusting the density of the vehicle of the cosmetic composition relative to the density of the micro-capsules or to using or preparing micro-capsules having a density which is sufficiently close to that of the above-mentioned vehicle into which the capsules are to be introduced. This result is preferably achieved by
70 modifying the density of the vehicle. The density of the vehicle can be adjusted to that of the micro-capsules by adding an excess of one of the components of the vehicle or by adding an appropriate additional substance which is inert towards the other components.

The capsules may be introduced either directly at any moment during the preparation or into a premix obtained from the 85 components of the vehicle. It is also very useful to add a wetting agent to the capsules before introducing them into the vehicle or premix. Generally, the deodorant composition of this invention is in the form of a 90 powder, a stick, a lotion or a sanitary towel; the lotion can advantageously be used in an aerosol. A part at least of the vehicle may also be micro-encapsulated.

In a powder, the cosmetic composition 95 contains, in addition to the capsules, solid particles such as talc powders and similar powders. Where it is presented in the form of a stick, care should be taken to ensure that the micro-capsules are not destroyed by mechanical pressure during manufacture; and for this purpose appropriate premixes, thicker envelopes and capsules of smaller sizes are advantageously used.

Where the deodorant compositions are 100 presented in the form of aerosols, the envelope of the micro-capsules should be of a sufficiently elastic material for the capsules not to be destroyed at the moment of spraying (since there is a rapid increase in 110 volume due to the abrupt decompression). Preferably the lotion for the aerosol contains micro-capsules having an average diameter from 30 to 40 microns.

The present invention is very particularly 115 applicable to cosmetic deodorant compositions but it is obvious that it is equally applicable to all the treating compositions used for body hygiene such as anti-perspirant compositions in which perspiration especially 120 plays an important role either directly or indirectly.

It is also possible, according to the present invention, to micro-encapsulate a mixture which in addition to the antiperspirant 125 and/or deodorant ingredient used in an anhydrous medium, contains anhydrides of acids such as phosphorus pentoxide or lactic anhydride, which subsequently yield the corresponding acids on contact with the 130

water from perspiration.

Again, it is also possible to use micro-capsules of which the envelope is itself externally coated by at least one thin envelope which is inert towards the vehicle of the cosmetic composition, the degree of elasticity of this outer envelope material being greater than that of the inner envelope material, these envelope materials being permeable to water and capable of being destroyed, especially by an acid or by a water-ethanol mixture. The use of the outer envelope makes it possible to use inner envelopes which have the above-mentioned properties but which need not be inert towards the vehicle of the cosmetic composition. The combination of these envelopes thus make it possible more easily to obtain micro-capsules in accordance with the invention, in particular in the case where the cosmetic composition is packaged in the form of an aerosol, because the micro-capsules must not be destroyed at the moment that they are sprayed. The outer envelopes can be prepared from the polymers and colloids discussed above.

The following Examples further illustrate the present invention; parts and percentages are by weight:—

EXAMPLE 1

Deodorant Powder

A vehicle (perfumed powder) was prepared from the following mixture:

talc	98
perfume	2

The following mixture was prepared by grinding:

basic aluminium hydrochloride	... 98
hexachlorophene 2

40 The latter powder thus obtained was micro-encapsulated with cellulose acetophthalate the average dimension of the capsules being about 100 to about 250 microns.

45 Thereafter 72 parts by weight of perfumed talc were mixed with 28 parts by weight of micro-capsules.

A delayed effect deodorant powder was thus obtained. This powder adhered to the skin in the areas chosen for the application and at the moment when perspiration commenced, the envelope of the micro-capsules dissolved, liberating the active products and thus suppressing all objectionable odours.

EXAMPLE 2

Deodorant lotion which can be used in a hand spray.

On the one hand, a perfumed alcoholic solution was prepared with:

96° alcohol	98
perfume	2

On the other hand, a powder mixture was prepared which contained:

65 selected quaternary ammonium salt	1.5
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basic aluminium hydrochloride ... 98.5 and which was micro-encapsulated in polyvinyl alcohol, the size of the micro-capsules being from 30 to 50 microns.

In order to obtain the deodorant lotion, 70 the following mixture was thereafter prepared:

perfumed alcohol	... 60 parts by weight
micro-capsules 40 parts by weight

This lotion was used as spray which had 75 to be shaken just before use. The micro-capsules deposited on the skin in the chosen application areas; the perspiration dissolves their envelopes when it is formed, liberating the active products and thus suppressing all 80 objectionable odours.

EXAMPLE 3

Deodorant lotion in the form of an aerosol.

Hexachlorophene was micro-encapsulated with the aid of polyvinyl acetate or ethyl 85 cellulose, the size of the micro-capsules being, on average, 30 microns.

A perfumed alcohol is prepared with:	
96° alcohol 98
perfume 2 90
0.5% by weight of micro-capsules were added to this perfumed alcohol. An alcoholic lotion having a delayed deodorant effect was thus obtained; it was packaged in an aerosol can which, for example, contained: 95	
alcoholic liquor containing the micro-capsules 50

"Freon" (Registered Trade Mark)	12 50
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As in Example 2, it was necessary to shake the aerosol can just before use. 100

EXAMPLE 4

Dry deodorant lotion in the form of an aerosol.

A solution was prepared which contained:	
isopropyl myristate 60 105
butyl stearate 5
acetone 30
perfume 5

As in Example 3, hexachlorophene was micro-encapsulated in micro-capsules of the same size as in Example 3. 110

In order to prepare a deodorant solution, 5% by weight of micro-capsules were added to the original mixture; this deodorant lotion was packaged in an aerosol container as 115 in Example 3, the can having to be shaken just before use.

The anhydrous deodorant composition was deposited on the skin in the chosen application areas; the envelopes of the 120 micro-capsules dissolved when perspiration appeared, thereby producing the desired deodorant effect.

EXAMPLE 5

Deodorant Stick.

A perfumed vehicle was prepared which contained:

sodium stearate 10
glycerine 10
propylene glycol 15 130

- 1% dyestuff solution yellow sulphacid J Extra (C.T. 19140) 0.15
 96° alcohol, q.s.p. 100
 perfume q.s.p.
- 5 The constituents were melted on a water-bath at a temperature of about 50°C and the mixture, which became pasty, was allowed to cool.
 0.5% of hexachlorophene micro-encapsulated in a cellulose acetophthalate polymer, the size of the micro-capsules being of the order of 30 to 50 microns, was incorporated therein.
 The micro-capsules were uniformly distributed in the pasty mass with the aid of a suitable stirrer and the mass extruded, cooled and cut into sticks, which were then packaged.
 The delayed deodorant action, as in the preceding Examples, was obtained.
- EXAMPLE 6**
- Deodorant sanitary towel.
 The following solution is micro-encapsulated:
- | | | |
|----|---|-----------------|
| 25 | isopropyl myristate | 60 |
| | 2-octyl-2-decanol | 38 |
| | Cetavlon (cetyl-trimethyl-ammonium bromide) | 0.2 |
| 30 | 3', 4', 5 - trichlorosalicylanilide ("Anobial") (Registered Trade Mark) | 0.2 |
| | hexachlorophene | 1.4 |
- The micro-encapsulation was carried out with polyvinyl acetate, the size of the micro-capsules being, on average, 30 to 50 microns.
 The micro-capsules were homogeneously distributed in a cellulose wadding towel or were distributed in alternate layers on a paper tissue or cotton fabric.
 The destruction of the micro-capsules and their bactericidal and fungicidal action occurred at the appropriate moment.
- WHAT WE CLAIM IS:—**
- 45 1. A cosmetic composition suitable for application to the skin which comprises an appropriate vehicle, and a deodorant and/or anti-perspirant agent which is micro-encapsulated, the micro-capsules being such that they become ruptured when exposed to perspiration.
 2. A composition according to claim 1 wherein the weight of the encapsulating material is from 1 to 10% by weight of the total weight of the micro-capsules.
 3. A composition according to claim 2 wherein the weight of the encapsulating material is from 3 to 6% by weight of the total weight of the micro-capsules.
- 50 4. A composition according to any one of claims 1 to 3 wherein a part at least of the vehicle is also micro-encapsulated.
 5. A composition according to any one of claims 1 to 4 wherein the deodorant is hexachlorophene, dichlorophene, a long chain quaternary ammonium compound, a salicylanilide or a chlorophenylhexane.
- 55 6. A composition according to any one of claims 1 to 4 wherein the anti-perspirant agent is an aluminium alum. 70
 7. A composition according to any one of the preceding claims wherein the deodorant micro-capsules also contain a perfume.
- 60 8. A composition according to any one of the preceding claims wherein the deodorant or anti-perspirant micro-capsules are anhydrous and contain an anhydride of an inorganic or organic acid which is compatible with the other ingredients of the 80 micro-capsules.
- 65 9. A composition according to claim 8 wherein the said micro-capsules contain phosphorus pentoxide or lactic anhydride. 85
 10. A composition according to any one of the preceding claims wherein the micro-capsules also contain an alcohol of 1 to 6 carbon atoms.
 11. A composition according to claim 10 wherein the micro-capsules also contain ethanol.
- 70 12. A composition according to any one of the preceding claims wherein the encapsulating material is destroyed by water, is permeable to water but is destroyed by a mixture of water and one of the ingredients of the micro-capsules, or is destroyed by micro-organisms which accompany perspiration. 95
 13. A composition according to claim 12 wherein a single encapsulating material which is inert to the deodorant and/or anti-perspirant agent and to the vehicle, is permeable to water, but is destroyed by an aqueous solution of an ingredient of the micro-capsules, or is water-soluble is used. 100
 14. A composition according to claim 13 wherein the encapsulating material is gelatine, ethyl cellulose, cellulose acetophthalates, or a polyvinyl alcohol. 105
 15. A composition according to claim 13 wherein the encapsulating material is permeable to water but is destroyed by aqueous alcoholic (1 to 6 carbon atoms) or aqueous acidic solutions, the micro-capsules containing an alcohol of 1 to 6 carbon atoms or an anhydride. 110
 16. A composition according to claim 15 wherein the encapsulating material is a hydrolysed styrene/maleic acid copolymer. 115
 17. A composition according to any one of claims 1 to 12 wherein the walls of the micro-capsules consist of two layers, the inner layer being inert to the deodorant and/or anti-perspirant agent and the outer layer being inert to the vehicle, the elasticity of the outer layer being greater than that of the inner layer and the two layers being permeable to water or water-soluble. 120
 18. A composition according to any one 125

- of the preceding claims in the form of a powder, the encapsulating material being cellulose acetophthalate and the average diameter of the micro-capsules being from 5 100 to 250 microns.
19. A composition according to any one of claims 1 to 17 in the form of a lotion, the encapsulating material being a polyvinyl alcohol, and the average diameter of the 10 micro-capsules being from 30 to 50 microns.
20. A composition according to any one of claims 1 to 17 in the form of a lotion suitable for packaging in an aerosol container, the average diameter of the 15 micro-capsules being from 30 to 40 microns.
21. A composition according to claim 20 wherein the encapsulating material is polyvinyl acetate or ethyl cellulose.
22. A composition according to claim 20 wherein the encapsulating material is one satisfying the requirements of claim 17.
23. A composition according to any one of claims 1 to 22 wherein the density of 25 the micro-capsules is similar to that of the vehicle.
24. A composition according to any one of claims 1 to 17 in the form of a stick, the micro-encapsulating material being a 30 cellulose acetophthalate polymer, and the average diameter of the micro-capsules being from 30 to 50 microns.
25. A composition according to any one of claims 1 to 17 in the form of a sanitary towel, the microcapsules and vehicle being 35 distributed in, or on, the cellulose wadding or in alternate layers of the paper tissue or cotton fabric of the sanitary towel, the micro-encapsulating material being a polyvinyl acetate and the average diameter of 40 the micro-capsules being from 30 to 50 microns.
26. A composition according to claim 1 substantially as hereinbefore described.
27. A composition according to claim 1 45 substantially as described in any one of the Examples.
28. An aerosol container containing a composition as claimed in any one of claims 20 to 22.
29. An aerosol container according to claim 28 substantially as described in Example 3 or 4.
30. A method of inhibiting or preventing perspiration and/or odours from an area 55 of the human body which comprises applying to the area a composition as claimed in any one of claims 1 to 27.

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